

(10–19 μ in greatest diameter—the more ventral ones being shorter and thinner); they have short spinous regions (8–12 rows), with no bare distal tips; the distal tips are bifid—the secondary tooth blends in with the spinous rows or it may be inconspicuous (Fig. 2, *e-f*). (This is in contrast to *L. longicirrata* in which the middle neuropodial setae are distinctly bifid, with bare distal tips.)

Habitat.—The specimens were dredged from mud in 35 to 70 fathoms. E. and C. Berkeley (in correspondence) have found them commensal in the mud tubes of the polychaete *Praxillella affinis* (Sars) var. *pacifica* Berkeley. (This is in contrast to *L. longicirrata* which is usually found free in dredge material. However, on two occasions, I found them within parchmentlike tubes, agglutinated with bits of shell

and rock—a tube evidently of their own making.) The extreme delicacy of the elytra and body would indicate a somewhat protected habitat for both species.

Locality.—Type: off Green Point, Carr Inlet, 51 fathoms in mud. Paratypes: near Gertrude Island, Carr Inlet, 70 fathoms in mud; off Herron Island, Case Inlet, 35 fathoms in mud.

LITERATURE CITED

- BERKELEY, EDITH. *Polychaetous annelids from the Nanaimo district. Pt. 1: Syllidae to Sigalionidae*. Contr. Can. Biol. and Fish., new ser., 1(11): 205–218, 1 pl. 1923.
- BERKELEY, EDITH and CYRIL. *North Pacific Polychaeta, chiefly from the west coast of Vancouver Island, Alaska and Bering Sea*. Can. Journ. Res., D, 20(7): 183–208. 1942.

ZOOLOGY.—*American Caudata, V: Notes on certain Appalachian salamanders of the genus Plethodon*.¹ M. B. MITTLEMAN, New Rochelle, N. Y. (Communicated by HERBERT FRIEDMANN.)

The action of Pope and Hairston (1948: 106–107) in describing two nominally new races of salamanders, *Plethodon shermani rabunensis* and *P. s. melaventris*, reflects a taxonomic viewpoint radically opposed to that of Grobman (1944) and some other workers. As pointed out by their describers, *rabunensis* and *melaventris* have been “for many years . . . identified as *P. metcalfi*: more recently by Grobman as *P. clemsonae*.” Obviously, the status and proper allocation of Pope and Hairston’s new forms are contingent upon the definitions of the species *clemsonae* and *metcalfi*.

Based on topotypic material, the structural characters of *clemsonae* may be summarized as follows: Costal grooves 15 or 16 (including inguinal and axillary branches of the first and last grooves); appressed toes sometimes meeting, but more often separated by one or two costal folds; vomerine teeth 9–12 per series. The color characteristics of *clemsonae*, which are so important in differentiating it from certain other related species of *Plethodon*, have been subject to considerable discussion. Brimley’s original description (1927: 73–

74) shows that some of his type specimens had white or grayish dorsal markings when fresh, while others were uniformly black on all dorsal surfaces. Two topotypes collected by Arnold Grobman and myself possessed whitish-gray (ashy) lichenoid markings in life, which were particularly prominent along the sides of the head and body (see Bishop, 1943: fig. 64). Grobman has discussed (1944: 294) the possibility that the absence or presence of light pigments in *clemsonae* may be associated with the length of preservation, as is occasionally the case in such species as *Plethodon richmondi*, *P. nettingi*, and *P. welleri*. This is, of course, a distinct possibility, but it is likewise true that some *clemsonae* are quite immaculate; pigmentation in *clemsonae* is evidently subject to some variation, as in other species of *Plethodon*. The color characteristics of *clemsonae* are a black dorsum and belly (belly varying from almost pure black to a very dark slaty gray), with the throat (and occasionally the anterior part of the breast) whitish or grayish, with a grayish white pattern of irregular lichenoid maculations sometimes present on the dorsum and sides of the head and body.

Brimley’s type of *metcalfi* is an adult

¹ Received September 9, 1948.

male (snout-vent 60 mm), with 15 costal grooves, no costal folds between the appressed toes, 11 or 10 vomerine teeth, uniform bluish above and grayish tan or fawn below. Salamanders agreeing closely with this type are known from southwestern North Carolina (Haywood County) north through the southern Blue Ridge Province to Beartown Mountain (4,500–4,700 feet) near Burkes Garden, Tazewell County, Va. (Hoffman and Kleinpeter, 1948: 603), and Mount Rogers (5,000–5,600 feet); Grayson County, Va. (collected by Hoffman and Kleinpeter). On the other hand, specimens from more southerly and westerly points in the Carolinas and Georgia possess characteristics that identify them with *clemsonae*, as described above. As pointed out originally by Grobman (1944), these dark-bellied "*metcalfi*" are in fact conspecific with Brimley's *clemsonae*, and the two forms—the light-bellied *metcalfi* and the dark-bellied *clemsonae*—occupy predominantly vicarious ranges (1944: fig. 5). The distribution of *clemsonae* extends from Macon, Jackson, and Transylvania Counties, N. C., to Pickens and Greenville Counties, S. C., and Rabun and Habersham Counties, Ga.

Pope and Hairston (*loc. cit.*) have described certain specimens of the dark-bellied *clemsonae* from Rabun Bald Mountain, Rabun County, Ga., as *Plethodon shermani rabunensis*, diagnosing their new salamander as "a member of the *jordani-metcalfi* group with white spots on the cheeks and along the sides of the body. The legs are never red as in *B. s. shermani*." The description points out further that the type (adult female, 118 mm total length, snout-vent 62 mm) has 13 costal grooves and vomerines 10–7, and that "the color is black above, shading into dark gray below; the throat is paler than the belly." As given, the description of *rabunensis* offers no tenable point of difference to distinguish this nominal subspecies of *P. shermani* from *P. clemsonae*, except for the presence of 13 costal grooves (as compared to 15 or 16 in *clemsonae*). Yet even this apparent difference is illusory, and arises as a result of the method used in counting costal grooves, rather than indicating a true

meristic difference. In order to obtain the full costal groove count in *clemsonae* the axillary and inguinal branches of the first and last grooves must be counted. Sometimes these are poorly developed or obscure as a result of preservation; if they are not included, a count of 13 or 14 is obtained, rather than 15 or 16. In practice, most herpetologists use the "maximum count" method, which includes the axillary and inguinal branches. Hence, with the apparent costal groove count difference negated, there appears to be no salient difference between *rabunensis* and *clemsonae*, and I conclude that these forms are identical.

The status of Pope and Hairston's new *P. shermani melaventris* likewise seems poorly established. In this instance the race is diagnosed as "An immaculate member of the *jordani-metcalfi* group with a black belly." The type is further described as being an adult male (total length 116 mm, snout-vent 60 mm), with 14 costal grooves, 10 or 11 vomerine teeth, body and limbs immaculate black above and below, throat gray; Pope and Hairston state also that their 112 paratypes from Macon, Jackson, and Transylvania Counties, N. C., exhibit no significant variation. The range of *melaventris* is given as extending from Swannanoa, Buncombe County, N. C., to Greenville County, S. C., and westward to Highlands, Macon County, N. C. As in the case of *rabunensis*, the description of *melaventris* offers no characters to set it apart from *clemsonae*, save for the costal groove count, and this again reflects a method of counting rather than a real difference.

The fundamental difference between *metcalfi* and *clemsonae* lies in the ventral pigmentation, as previously discussed. In addition, *metcalfi* is a slightly longer-toed form, occasionally having one costal groove between the appressed toes, but more often none, while in *clemsonae* there is usually at least one groove between the toes, and only rarely do the toes meet or overlap (in adult specimens). Of the two, *metcalfi* tends to have shorter vomerine series, the range of vomerine teeth counts in specimens I have seen being 6–12, average 8.1,

whereas in *clemsonae* the variation is 6–16, average 9.1. The examination of several series of salamanders from the vicinity of Highlands, Macon County, N. C., reveals considerable variation in the degree of intensity of the belly pigment. For example, in a series of specimens from Mirror Lake, near Highlands, U.S.N.M. no. 88010, female (snout-vent 58 mm), has an immaculately black back and belly, as do also U.S.N.M. no. 88014 male (snout-vent 56 mm), and no. 88016, female (snout-vent 58 mm). On the other hand, three smaller specimens taken at the same time and locality (U.S.N.M. nos. 88011–13, all males, snout-vent 40, 49, 46 mm) have black dorsums and light grayish throats, but dark yellowish gray bellies. Similarly, in U.S.N.M. nos. 104527–31, from Little Yellow Mountain, 4,100 feet, near Highlands, two large females and a male (snout-vent 50, 63, and 60 mm, respectively) have black backs and bellies, while two smaller females (snout-vent 39 and 44 mm) have gray bellies. Another specimen, U.S.N.M. no. 72825, female, Whiteside Mountain, near Highlands (snout-vent 67 mm), is black above and dark slaty gray below. Specimens I have seen from Rabun and Habersham Counties, Ga., and Pickens County, S. C., are uniformly black above and below (except for the throat), from immaturity (snout-vent 35 mm) to maximum adult size (snout-vent 80 mm), although they occasionally have grayish or grayish-white fleckings on the head and body. Taken in their entirety, the variations of *metcalfi* and *clemsonae*, as well as the vicarious ranges and apparent intergradation in Macon County, N. C., make it evident that these two forms are allopatric races of the same species and accordingly should be recognized as *Plethodon metcalfi metcalfi* and *P. m. clemsonae*. The consistent types of ventral pigmentation that characterize the two races within their respective ranges, and the apparent association in part between size (age) and degree of belly pigmentation in some Highlands specimens, may indicate not only intergradation in the vicinity of Highlands but may also be taken to indicate in ontogenetic fashion the phylogenetic

process which has resulted in the derivation of *clemsonae* from *metcalfi*.

While the arrangement suggested above satisfies the situation so far as the majority of known specimens is concerned, two specimens are known that fall completely outside this system. These two examples, U.S.N.M. nos. 127523–4, were collected by H. J. Cole, on Black Mountain, ca. 4,000 feet, Harlan County, Ky. One (no. 127523) is a sexually mature female (snout-vent 56 mm), while the other (no. 127524) is an immature male (snout-vent 39 mm). Both specimens are a uniform rich black above and below, including the chin, throat, and breast, except for a very few tiny, isolated light flecks, and have whitish palms and soles. In both specimens the costal count is 15, and the toes overlap, while the vomerine count is 12–14 in the female specimen and 10–10 in the male. In color and dentition these specimens are indistinguishable from *clemsonae*, except for the uniformly black throat, while the overlapping toes might suggest *metcalfi*. On purely geographic grounds it would be expected that they would fall in the scope of *metcalfi*; that they do not, and appear instead to be more nearly identifiable with *clemsonae*, raises a point of major importance. It is possible that additional specimens from this locality would provide sufficient characteristics to distinguish a separate form. But for the present, the status of these Kentucky specimens is not properly determinable; a reasonable decision as to their identity must await additional material from this critical area.

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LITERATURE CITED

- BISHOP, SHERMAN C. *Handbook of salamanders*, xiv+555 pp., 144 figs., 56 maps. 1943.
BRIMLEY, CLEMENT S. *An apparently new salamander (Plethodon clemsonae) from S. C. Copeia*, no. 164: 73–75. 1927.

GROBMAN, ARNOLD B. *The distribution of the salamanders of the genus Plethodon in eastern United States and Canada.* Ann. New York Acad. Sci. 45(7): 261-316, figs. 1-11. 1944.

HOFFANN, RICHARD L., and KLEINPETER, HUBERT I. *Amphibians from Burkes Garden,*

Virginia. Amer. Midl. Nat. 39(3): 602-57. 1948.

POPE, CLIFFORD H., and HAIRSTON, NELSON G. *Two new subspecies of the salamander Plethodon shermani.* Copeia, 1948, no. 2: 106-107.

ICHTHYOLOGY.—*A new name for Synchiropus altivelis Regan, with a key to the genera of the fish family Callionymidae.*¹ LEONARD P. SCHULTZ and LOREN P. WOODS, U. S. National Museum.

During the course of our study of the fishes of the northern Marshall Islands it was necessary to review the genera of callionymid fishes of the world. We observed that *Synchiropus altivelis* Regan [Trans. Linn. Soc. London 12: 249, pl. 30, fig. 1. 1908 (Seychelles); Norman, John Murray Exped. 1933-34, Sci. Repts. Fishes, 7 (1): 75, fig. 27. 1939 (Gulf of Aden)] is preoccupied by *Callionymus altivelis* Temminck and Schlegel [Fauna Japonica, p. 155, pl. 79, fig. 1. 1845 (Japan)], now *Synchiropus altivelis* (T. and S.). We herewith propose the new name *Synchiropus normani* to replace *S. altivelis* Regan, 1908.

Although Fowler (Proc. U. S. Nat. Mus. 90: 1-2. 1941) gave a key to the genera, new facts have been found that require us to present our different analysis, with synonyms of genera. The species of this family have not been revised, and they are in a general state of confusion, somewhat as a result of the differences between sexes. We do not have the time or the specimens necessary to revise carefully the several dozen species named but believe our analysis of genera will aid in referring most or all of the species to a defined genus. We have examined the 54 lots of types and paratypes of this family along with numerous other nontype specimens in the National Museum. That material forms the basis of the following key:

KEY TO THE GENERA OF CALLIONYMIDAE

- 1a. Two dorsal fins.
 2a. No pelvic ray free or separate from others, all connected by membrane.

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3a. Two lateral lines, lower one represented by a fleshy keel or membranous fold along lower side of body beginning opposite anterior base of anal fin; opercular membrane ending in a free flap; posterior part of maxillary semitubular in form, convex side inward, open side outward, with a very short anterior and outwardly projecting concave lobe, scarcely developed in small specimens; opercular opening superior in position, above opercle, in form of a small foramen; pelvic fins connected to pectoral base by a membrane attached opposite base of 4 to 6 pectoral rays from dorsal edge of fin; upper lateral line simple; no orbital tentacle; preopercular spine acute with small spines dorsally and a small antrorse spine basally; soft dorsal and anal rays all unbranched except last one in each fin which is branched to base.

*Calymmichthys*² Jordan and Thompson

3b. A single lateral line located mostly in dorsal part of body, no thin fold of skin along lower side.

4a. An orbital tentacle in combination with a broad somewhat fleshy lower lip folded under chin; opercular opening a small foramen above opercle; no free opercular flap; pelvic membrane attached to base of pectoral fin; lateral line simple; preopercular spine acute with spiny points dorsally and an antrorse spine ventrally and somewhat basally; all rays of soft dorsal and anal fins un-

² *Calymmichthys* Jordan and Thompson, Mem. Carnegie Mus. 6(4): 296, pl. 36, fig. 2. 1914 (genotype, *C. xenicus* Jordan and Thompson). Their figure lacks the lower lateral line described twice in the text.

Diacallionymus Fowler, Proc. U. S. Nat. Mus. 90: 29. 1941 (genotype, *Callionymus goramensis* Bleeker).

Dermosteira Schultz, U. S. Nat. Mus. Bull. 180: 267, fig. 26. 1943 (genotype, *D. dorotheae* Schultz); We believe *C. cookei* Günther belongs in this genus.